

July 3rd, 2019

Confessions of an Accidental Greenie: From Green Destiny to the Green500

Wu Feng

Virginia Tech, USA

Abstract

While green computing appears to be mainstream, this was not always the case. It was only a decade or so ago when green computing, and in particular, green supercomputing, was still being scoffed at. Back then, computing only focused on performance in terms of speed, as evidenced by the annual Gordon Bell Awards at Supercomputing (SC). Such a view is akin to purchasing an automobile based solely on its top speed rather than on other performance metrics such as energy efficiency or reliability. As a consequence, when Green Destiny debuted in April 2002 as the world's most energy-efficient (i.e., greenest) supercomputer in the world, it was resoundingly ridiculed --- so much so that one supercomputing visionary joked that "Green Destiny is so low power that it runs just as fast as when it is unplugged." At the same time, the audacity of Green Destiny, a 240-node supercomputer in five square feet and consuming as little as 3.2 kilowatts of power (or the equivalent of two hairdryers), created such a fervor as a disruptive technology that it led to international news coverage by the New York Times, CNN, the International Herald Tribune, PC World, Slashdot, and BBC News. Now 17 years later, this talk chronicles the confessions of an accidental green from how Green Destiny came about, how it has evolved, and what the future holds.



Short bio



Wu Feng is the Elizabeth & James Turner Fellow and Professor of Computer Science at Virginia Tech (VT), where he directs the Synergy Lab and serves as a VT site co- director for the National Science Foundation Center for High-Performance Reconfigurable Computing (CHREC) and director of the Synergistic Environments for Experimental Computing (SEEC) Center. In addition, he holds appointments in the Department of Electrical & Computer Engineering, Health Sciences, and Biomedical Engineering and Science.

Dr. Feng has published 300+ peer-reviewed technical publications in high-performance networking and computing, high-speed systems monitoring and measurement, low-power and power-aware computing,

computer science pedagogy for K-12, and bioinformatics. Of recent note is the publication of "The Green Computing Book: Tackling Energy Efficiency at Large Scale" (<http://www.amazon.com/The-Green-Computing-Book-Computational/dp/1439819874>) and a worldwide commercial on his research on biocomputing in the cloud, courtesy of the Microsoft Cloud (<https://www.ispot.tv/ad/AtO0/microsoft-cloud-changing-the-world-featuring-wu-feng> and <https://www.ispot.tv/ad/7xoX/microsoft-cloud-empowering-cancer-research>).

Dr. Feng holds a Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign, a M.S. in Computer Engineering, and B.S. degrees in Electrical & Computer Engineering and Music from Penn State University. In addition to being a Distinguished Scientist of the ACM and Senior Member of the IEEE Computer Society, Dr. Feng has been named to HPCwire's Top People to Watch twice, once in 2004 and again in 2011, and was recently recognized with an Outstanding Faculty Award bestowed by the Commonwealth of Virginia in 2013.